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EXAMINER

CHANG, RICK KILTAE

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3726

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/612,222	Applicant(s) AKAGAWA ET AL.	
	Examiner Rick K. Chang	Art Unit 3726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36,49 and 50 is/are pending in the application.
- 4a) Of the above claim(s) 3,5,6,9,10,21,23,24,27,28 and 50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-2,4,7-8,11-20,22,25-26,29-36,49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>of record</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I in the reply filed on 9/10/07 is acknowledged. Claim 49 will be examined along with Group I.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-2, 4, 7-8, 11-20, 22, 25-26, 29-36 and 49 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The disclosure, as originally filed, failed to provide support for forming via holes in the insulating layer before covering the board with the first insulating layer. The disclosure, Figs. 4-5, supports forming via holes in the insulating layer after covering the board with the first insulating layer. Further, the disclosure failed to provide support for "compensating for the actual location of the displaced first electronic component in a subsequent layer" since the via holes are formed in the insulating layer before covering the board with the insulating layer. Furthermore, the disclosure failed to provide support for "the actual location of the displaced first electronic component in a subsequent layer". The actual location of the first electronic component is on the surface of the board, not in the subsequent layer. The

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disclosure failed to provide support for "forming via holes". Fig. 3 shows "via formation", no "via holes formation".

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-2, 4, 7-8, 11-20, 22, 25-26, 29-36 and 49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 19 and 49, last paragraph: "the actual location" lacks positive antecedent basis. Is the first electronic component on a surface of the board or in a subsequent layer?

Claims 1, 19 and 49, last paragraph: it is unclear "forming via holes in the first insulating layer" is performed before or after covering the board with the first insulating layer. It appears that that via holes are formed in the first insulating layer before covering the board.

6. Claims 1-2, 4, 7-8, 11-20, 22, 25-26, 29-36 and 49 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted step is: covering the board with the first insulating layer.

Claims are ambiguous and competitors would be unable to discern the bounds of the invention.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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8. The disclosed invention in claims 14, 16, 18, 32, 34 and 36 is inoperative and therefore lacks utility. By correcting the data to move the wiring line away from the terminal of the other electronic component, the printed circuit board will have an open circuit and render the PCB inoperative since there is no electrical communication with the terminal of the other electronic component. Further, the terminal of the formed electronic component makes no electrical communication with any other electronic components. Therefore, the PCB is inoperative.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-2, 4, 7-8, 11-13, 15, 17, 19-20, 22, 25-26, 29-31, 33, 35 and 49, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Taff et al (US 6,165,658) in view of Leedy (US 5,103,557).

Re claims 1, 4, 19 and 22: Taff discloses detecting, before said board is covered with a first insulating layer, the actual position of a first electronic component formed on a surface of said board (col. 7, lines 22-57 and col. 8, lines 55-58); calculating a displacement between the design position of said first electronic component and the actual position of said first electronic component on the surface of said board, and holding said displacement as first displacement data (col. 8, lines 58-65); correcting, based on said first displacement data, design data to be used for processing said board after said board is covered with said first insulating layer to form a wiring pattern connected to said first electrical component (col. 8, lines 65-67 and col. 9, lines 1-2); and

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forming via holes in the first insulating layer in accordance with the corrected design data, thereby compensating for the actual location of the displaced first electronic component in a subsequent layer (col. 7, lines 22-57 and col. 8, lines 44-54), except for detecting is performed before a first insulating layer covers the board.

Leedy discloses detecting is performed before a first insulating layer covers the board (in Fig. 5, there is no insulating layer between 15-1 and 2-1 as well as 15-2 to 2-2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taff by detecting is performed before a first insulating layer covers the board, as taught by Leedy, for the purpose of determining the positions of the electronic components.

Re claims 2 and 20: Taff discloses applying, based on said design data corrected in said correcting, a maskless exposure to the board covered with said first insulating layer (col. 9, lines 12-26).

Re claims 7-8, 11-12, 25-26 and 29-30: Taff discloses applying, based on said design data corrected in said correcting, based on said second displacement data, a maskless exposure to said board covered with said second insulating layer (col. 9, lines 12-26).

Re claims 13, 15, 17, 31, 33 and 35: Taff discloses that when the actual position of a terminal of the formed electronic component is displaced from an end of a wiring line that is defined in the design data as being the end to be connected to the terminal of the electronic component (col. 8, lines 55-63; for example, in Fig. 1, a wiring between terminals 10 and 12 connects to terminal 14 instead of connecting to terminal 12 as defined in the design data), the correcting, based on the second displacement data (displacement between the actual and the

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design data), corrects the design data so as to move the end of the wiring line to be connected to the terminal of the electronic component to the actual position of the formed electronic component (col. 10, lines 14-17; redirecting the wiring between terminals 10 and 14 to terminals 10 and 12).

Claim 49: Taff discloses in col. 17, lines 12-20 calculating correction file relative to a CAD reference (means for calculating a displacement; a CPU of a computer) and implementation of the correction (means for correcting; a CPU of a computer); and means for forming via holes (col. 3, line 14 punching mechanisms), except for means for detecting.

Leedy discloses in Fig. 5 means for detecting (10, 36, 46, 48, 50, 38, 40, 15-1, 15-2 . . .).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Taff by detecting is performed before a first insulating layer covers the board, as taught by Leedy, for the purpose of determining the positions of the electronic components.

Response to Arguments

6. Applicant's arguments with respect to claims as stated above have been considered but are moot in view of the new ground(s) of rejection.

Interviews After Final

7. Applicant note that an interview after a final rejection must be submitted briefly in writing the intended purpose and content of the interview (the agenda of the interview must be in writing). Upon review of the agenda, the Examiner may grant the interview if the examiner is convinced that disposal or clarification for appeal may be accomplished with only nominal

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further consideration. Interviews merely to restate arguments of record or to discuss new limitations will be denied. See MPEP 714.13 and 713.09.

Conclusion

8. Please provide reference numerals (either in parentheses next to the claimed limitation or in a table format with one column listing the claimed limitation and another column listing corresponding reference numerals in the remark section of the response to the Office Action) to all the claimed limitations as well as support in the disclosure for better clarity (optional).

Applicants are duly reminded that a full and proper response to this Office Action that includes any amendment to the claims and specification of the application as originally filed requires that the applicant point out the support for any amendment made to the disclosure, including the claims. See 37 CFR 1.111 and MPEP 2163.06.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick K. Chang whose telephone number is (571) 272-4564. The examiner can normally be reached on 5:30 AM to 1:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Bryant can be reached on (571) 272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rick K. Chang/
Primary Examiner, A.U. 3726

RC
February 27, 2008